

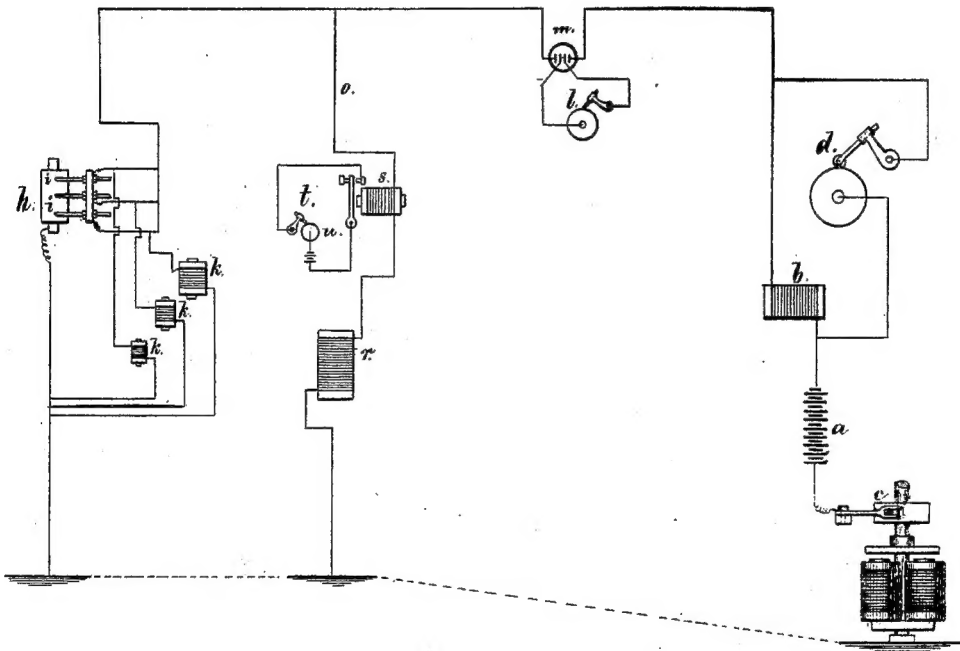
Case 65.

T. A. EDISON.

Circuits for Automatic Telegraphs

No. 141,773.

Patented August 12, 1873.



Witnessed,

*Chas. F. Smith*  
*Genl. P. Mackney*

Inventor

*Thos. A. Edison.*

*Lemuel W. Searell*  
*att'y*

# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF NEWARK, NEW JERSEY, ASSIGNOR TO HIMSELF  
AND GEORGE HARRINGTON, OF WASHINGTON, D. C.

## IMPROVEMENT IN CIRCUITS FOR AUTOMATIC TELEGRAPHS.

Specification forming part of Letters Patent No. 141,773, dated August 12, 1873; application filed  
January 15, 1873.

### *To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Newark, in the county of Essex and State of New Jersey, have invented Improvements in Circuits for Chemical Telegraphs; of which the following is a specification:

This invention is intended for rendering the reception of the message more reliable and free from blurring or tailings upon the chemical paper. The line is kept statically charged by a battery, the circuit of which is interrupted with immense rapidity by an electro-magnetic engine or other device. At the receiving end there is a shunt with an electro-magnet in it. The electric tension is adjusted by a rheostat at the transmitting-station, so that ordinarily there will not be any mark at the receiving-station in consequence of the electro-magnet and shunt; but when the tension in the line is increased by the current going through the perforations of the paper at the transmitter and directly to the line, so as to cut out the rheostat, then a mark is made at the receiving-instrument, but there will not be any attenuation of the pulsation to produce tailings.

At the receiving-station I employ two or more styluses or pens, all connected with the main line, and to each is a shunt-circuit and an electro-magnet. The magnets are of varying character or power; hence they will act differently upon the stylus, and one will be sure to make a legible mark, although the electric conditions may vary from time to time or during the reception of the message, and the operator will be able to read the message reliably upon one of the two or more corresponding lines of marks on the strip before him.

In the diagram I have illustrated my improvement.

The battery *a*, rheostat *b*, and rapid contact-breaker *c* are in the main line or circuit. The rheostat, which may be adjustable, only allows the immensely rapid pulsations from *c* to pass sufficiently upon the line to keep the same statically charged to the required extent. The transmitting-instrument *d* is in a

shunt that connects with the line on both sides of the rheostat; hence the pulsations through the paper reach the line direct and increase the electric tension sufficiently to operate the receiving-instrument. The receiving-instrument *h* may be of any suitable character; but I find that there should be either an electro-magnet in a shunt-circuit to neutralize the static electricity by the counter-current as the magnet discharges, or else a battery and rheostat with the polarity of the shunt or local circuit the reverse of that of the main line. I, however, prefer to use two or more styluses or pens, *i*, connected to the main line and to shunt-circuits, in which are placed the electro-magnets *k*.

The tailings from the pulsations are neutralized by the reverse currents set up in the shunt-circuits as the electro-magnets discharge themselves; and by employing magnets of different powers or qualities there will be greater certainty of the record being clear and legible in one of the two or more lines of marks upon the strip of chemical paper, because the coils of the magnets are of different resisting power to vary the currents passing to the paper; and the secondary current induced in the magnet is more or less active as it is discharged.

Where a drop copy is desired it may be obtained upon the line by placing the two ends of the wires in a glass of water, *m*, and also the two poles of a local circuit, in which is a chemical-receiving instrument, *l*. By adjusting the proximity of the ends of the main-line wires to those of the local circuit the necessary division will be made for producing the record without materially interfering with the main line. At intermediate stations a branch connection, *o*, may be made to the earth with a resistance-coil, *r*, therein, and one or more of these coils may be brought into action by a switch, and these coils may form parts of electro-magnets, or a separate electro-magnet, *s*, be introduced, and a drop copy may be taken in a shunt-circuit, *t*, in this branch earth-circuit, by the electro-magnet acting upon a circuit-closing lever.

The magnet *s* may be made to operate a relay or sounder or a receiving-instrument at the local station, indicated at *u*.

I am aware that liquid rheostats or resistances have been made use of; but I am not aware that the ends of the line and of a shunt-circuit have been introduced in a liquid, and the four ends so varied or adjusted in position as to proportion the shunt and main-line currents.

I claim as my invention—

1. The resistance *b* and transmitting-instrument *d*, arranged in connection with the line, the battery *a*, and the rapid circuit-breaker *c*, as and for the purposes set forth.

2. Two or more styluses or pens connected with the main line and with shunt-circuits, in which are differing magnets for operation upon the chemical-receiving paper, as set forth.

3. The vessel of liquid receiving the two ends of the shunt-circuit and the two ends of the main line to vary the strength of the shunt-circuit according to the relative positions of such circuit ends, as set forth.

Signed by me this 12th day of December, A. D. 1872.

THOMAS A. EDISON.

Witnesses:

GEO. T. PINCKNEY,  
CHAS. H. SMITH.